

WHAT IS CLAIMED IS:

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1. An optical signal receiver comprising:
an opto-electric converter for converting an
optical signal transmitted from a remotely opposed
5 transmitter into an electric signal;
a reproduction circuit for reproducing a data
signal from an output of said opto-electric converter;
a fixed signal generation circuit for generating a
fixed signal having a logic level fixed to 0 or 1;
10 a switch for selectively outputting either the
data signal reproduced by said reproduction circuit or
the fixed signal generated by said fixed signal
generation circuit; and
a control circuit for detecting an abnormal state
15 of optical signal transmission and controlling said
switch,
said control circuit being adapted to output the
fixed signal from said switch, when it detects the
abnormal state while outputting the data signal from
20 said switch.

2. An optical signal receiver according to claim
1, wherein

the optical signal includes a main signal and an
25 auxiliary signal giving a DC component level and said
control circuit comprises means for detecting an AC
component level of the optical signal, means for

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detecting the DC component level of the optical signal,
means for comparing the detected AC component level and
the detected DC component level with respective
predetermined threshold values, and a clock extraction
5 circuit for extracting a clock component from the
electric signal and detecting a synchronized or
unsynchronized state, said control circuit being
adapted to determine that an abnormal communication
state has occurred when it detects at least a state of
10 the AC component level falling under the threshold
level, a state of the DC component level falling under
the threshold level and/or an unsynchronized state.

3. An optical signal receiver according to claim
15 2, wherein

said means for detecting the AC component level of
the optical signal comprises a first filter for
extracting the main signal from the electric signal and
a main signal detection circuit for transforming an
20 amplitude level of the main signal extracted by the
first filter into a voltage and said means for
detecting the DC component level of the optical signal
comprises a second filter for extracting the auxiliary
signal from the electric signal and an auxiliary signal
25 detection circuit for transforming an amplitude level
of the auxiliary signal extracted by the second filter
into a voltage.

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said reproduction circuit comprises a wave shaping circuit for reproducing the data signal on the basis of the clock component extracted by said clock extraction circuit and the electric signal outputted from said opto-electric converter.

said clock extraction circuit comprises a phase comparator, a voltage control oscillator adapted to receive an output of the phase comparator and a feedback loop for feeding back an output of the voltage control oscillator to the phase comparator by way of a loop filter.

6. An optical signal receiver according to claim 2, wherein

20 said control circuit causes said switch to be switched to output the data signal when the AC component level and the DC component level exceed the respective predetermined threshold values and said clock extraction circuit detects the synchronized state

25 while said switch is outputting the fixed signal.

7/ An optical signal receiver according to claim

2, wherein

5 said control circuit causes said switch to be
switched to output the data signal when the AC
component level and the DC component level exceed the
respective predetermined threshold values and said
clock extraction circuit detects the synchronized state
at the end of a predetermined period of time during
which said switch keeps on outputting the fixed signal.

10 8. An optical signal receiver according to claim
1, further comprising:

lenses for converging the optical signal to said
opto-electric converter.

15 9. An optical space transmission system
comprising:

a transmitter for transmitting an optical signal;
and

20 an optical signal receiver according to any of
claims 1 through 8, said optical signal receiver being
remotely opposed to said transmitter and adapted to
receive the optical signal transmitted from said
transmitter.

25 10. An optical space transmission system
according to claim 9, wherein

said transmitter comprises a main signal input

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section, an auxiliary signal generation circuit for
generating an auxiliary signal to be used for detecting
a DC component level of the optical signal, a
multiplexer for multiplexing the main signal and the
5 auxiliary signal and an electro-optic converter for
converting an output of the multiplexer into an optical
signal.

11. An optical space transmission system
10 according to claim 10, wherein
said transmitter further comprises lenses for
sending out the optical signal transmitted from the
electro-optic converter toward the optical signal
receiver.

12. An optical space transmission system
15 according to claim 10, wherein
said electro-optic converter comprises a laser
diode and a laser drive circuit for driving said laser
20 diode.

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